



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/791,809	03/04/2004	Hiroshi Takiguchi	118897	5390
25944	7590	04/24/2006	EXAMINER	
OLIFF & BERRIDGE, PLC P.O. BOX 19928 ALEXANDRIA, VA 22320				HSIEH, SHIH WEN
			ART UNIT	PAPER NUMBER
			2861	

DATE MAILED: 04/24/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

R

<b>Office Action Summary</b>	Application No.	Applicant(s)
	10/791,809	TAKIGUCHI, HIROSHI
	Examiner	Art Unit
	Shih-wen Hsieh	2861

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) Responsive to communication(s) filed on 01 October 2004.
- 2a) This action is FINAL.                            2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*; 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) 12, 14 and 15 is/are allowed.
- 6) Claim(s) 1, 2, 5, 6, 8, 9, 11 and 13 is/are rejected.
- 7) Claim(s) 3, 4, 7 and 10 is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 04 March 2004 is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All    b) Some \*    c) None of:
  1. Certified copies of the priority documents have been received.
  2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 3-4-04; 9-10-04; 12-2-05
- 4) Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) Notice of Informal Patent Application (PTO-152)
- 6) Other: \_\_\_\_\_

**DETAILED ACTION**

***Priority***

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

***Information Disclosure Statement***

2. "X" references listed in "European Search Report" EP 04 25 1385 dated July 5, 2004 have been considered, one of the "X" reference US 4,251,195 was used in this office action.

***Claim Objections***

3. Claims 12 and 14 are objected to because of the following informalities:

In regard to:

Claim 12:

Page 26, lines 7 and 9, please change "the micronization" and 'the oscillation frequency" into "a micronization" and "an oscillation frequency" respectively so as to correct a minor lack of antecedent basis problem.

Claim 14:

Line 27, please change "the micro-encapsulation" into "micro-encapsulation" or "a micro-encapsulation" to correct a minor lack of antecedent basis problem.

***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless —

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1, 2, 5/1-4, 8 and 11 are rejected under 35 U.S.C. 102(b) as being anticipated by Suzuki et al. (US Pat. No. 4,251,195).

In regard to:

Claim 1:

Suzuki et al. teach:

A droplet discharging device for discharging minute amounts of droplets containing a microcapsule composed from a minute core and a wall covering said core, comprising:

a tank (6, fig. 1) for storing a solution containing the core material (2, fig. 1) and shell material (1, fig. 1) of said microcapsule, refer to col. 3, lines 6-12; and one or a plurality of oscillating bodies (9, fig. 1) for applying vibrational energy to the core material within said tank and emulsifying said core material, and promoting the

micro-encapsulation with said shell material, refer to col. 3, lines 12-28; and col. 3, line 38 to col. 4, line 7.

Claim 2:

Suzuki et al. further teach:

wherein said tank is disposed in the vicinity of a droplet discharging hole (5a, fig. 1, col. 3, lines 12-16), and said oscillating body assumes the process of microencapsulating said core material and the process of discharging droplets containing this microcapsule from said discharging hole, refer to col. 3, line 38 to col. 4, line 7.

Claim 5/1-4:

Suzuki et al. further teach:

wherein said oscillating body includes at least one among a piezoelectric material, an oscillating body (9, fig. 1) driven by electrostatic force, or a micromotor, refer to col. 3, lines 16-22.

Claim 8:

Suzuki et al. further teach:

wherein cooling means is provided to said oscillating body or said tank, refer to col. 3, lines 49-57.

Claim 11:

A droplet discharging device for discharging minute amounts of droplets containing a microcapsule composed from a minute core and a shell covering said core, comprising:

a first tank for storing a solution containing the core material and shell material of said microcapsule;

means for applying emulsification energy to the core material within said tank and emulsifying said core material, and promoting the micro-encapsulation with said shell material;

a second tank for storing the solution containing said generated microcapsules; and

an oscillating body for discharging the solution stored in said second tank outside from a droplet discharging hole.

Rejection:

This claim is rejected on the basis as set forth for claim 1 discussed above. The second tank in this claim is shown in Suzuki et al.'s fig. 1 at the right-hand side of the drawing without a numeral, i.e., after the separator (13).

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 6/3/4 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki et al.

In regard to:

Claim 6/3/4:

Suzuki et al. teach the vibrator (9) vibrates at a definite frequency, and also in their preferred embodiments several frequencies in numerals, e.g., 200 Hz.

Therefore the device of Suzuki et al. DIFFERS from claim 6 in that it does not teach:

wherein said first frequency is an ultrasonic frequency of an inaudible range.

To select a type of frequency in forming the microcapsules will base on the speed of the flow and the size of the microcapsules to be formed. Therefore, the ultrasonic frequency is one of the options among a range of frequencies.

Therefore it would have been obvious to a person having ordinary skill in the art at the time the invention was made to select a definite frequency such as 200 HZ as taught by Suzuki et al. or an ultrasonic frequency as proposed by the instant application for the purpose of forming a desired size of microcapsules corresponding the frequency used and to be used in a special field.

Claim 9:

The device of Suzuki et al. DIFFERS from claim 9 in that it does not teach: wherein said tank is a compression chamber.

Suzuki et al. do not explicitly teach the tank (6) is a compression tank. However, Suzuki et al. teach the liquids stored in tanks 1 and 2 are pumped into the tank (6, Suzuki et al. called it a main body of a cooler) by pumps (3 and 4, fig. 1).

Therefore it would have been an obvious matter that the tank (6) is pressurized by the two pumps.

8. Claim 13/11/12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki et al. in view of Fulwyler et al. (US Pat. No. 4,302,166).

The device of Suzuki et al. DIFFERS from claim 13/11/12 in that it does not teach:

wherein the particle size of said microcapsule is set by adjusting the frequency and vibrational energy of said oscillating body.

Fulwyler et al. teach "droplet forming apparatus for use in producing uniform particles" in which a core liquid and a sheath liquid are used to form droplet (40, fig. 1) through vibration by a vibration device (34, fig. 1) such as a piezoelectric device. Fulwyler et al. further teach: the frequency can be selected from several resonant frequencies determined by the velocity and diameter of the liquid jet (22, which is the sheath liquid corresponding to the shell material of the instant application). A diameter corresponds to the size of the particle.

Therefore it would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify the device of Suzuki et al. to include a

frequencies selecting method as taught by Fulwyler et al. for the purpose of producing proper size of particle by the vibrator at a pre-selected frequency.

***Allowable Subject Matter***

9. Claims 12 and 14-15 are allowed.

10. Claims 3, 4, 7 and 10 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

11. The following is a statement of reasons for the indication of allowable subject matter:

In regard to:

Claim 3:

The primary reason for the allowance of claim 3 is the inclusion of the limitation of wherein said oscillating body generates a first vibrational energy of a first frequency corresponding to the particle size of said microcapsule to be formed, and a second vibrational energy of a second frequency lower than said first frequency for discharging droplets containing said microcapsule from said droplet discharging hole. It is this limitation found in this claim, as it is claimed in the combination that has not been

found, taught or suggested by the prior art of record, which makes this claim allowable over the prior art.

Claim 4:

The primary reason for the allowance of claim 4 is the inclusion of the limitation of wherein said tank is disposed in the vicinity of a droplet discharging hole, one of said oscillating bodies generates a first vibrational energy with a first frequency corresponding to the particle size of said microcapsule to be formed, and one of the other said oscillating bodies generates a second vibrational energy with a second frequency lower than said first frequency for discharging droplets containing said microcapsule from said droplet discharging hole. It is this limitation found in this claim, as it is are claimed in the combination that has not been found, taught or suggested by the prior art of record, which makes this claim allowable over the prior art.

Claim 7:

The primary reason for the allowance of claim 7 is the inclusion of the limitation of wherein the droplets containing said microcapsule are not able to move along the liquid flow path from said tank to said droplet discharging hole with the first vibrational energy of said first frequency, and said droplets are able to move along said liquid flow path with the second vibrational energy of said second frequency. It is this limitation found in this claim, as it is are claimed in the combination that has not been found, taught or suggested by the prior art of record, which makes this claim allowable over the prior art.

Claim 10:

The primary reason for the allowance of claim 10 is the inclusion of the limitation of wherein negative pressure adjustment means for setting the negative pressure within the tank is provided to said tank, and said negative pressure is raised or lowered in said micro-encapsulation process and said discharging process. It is this limitation found in this claim, as it is are claimed in the combination that has not been found, taught or suggested by the prior art of record, which makes this claim allowable over the prior art.

Claim 12:

The primary reason for the allowance of claim 12 is the inclusion of the method step of a discharging step for generating in said oscillating body a vibrational energy of the oscillation frequency for discharging said solution outside, and discharging the solution containing said microcapsule outside from said compression chamber. It is this step found in this claim, as it is are claimed in the combination that has not been found, taught or suggested by the prior art of record, which makes this claim allowable over the prior art.

Claims 14 and 15:

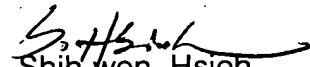
The primary reason for the allowance of claims 14 and 15 is the inclusion of the method step of a fourth step for pressurizing the solution stored in said second tank with an oscillating body and discharging said solution outside from a droplet discharging hole. It is this step found in each of the claims, as they are claimed in the combination that has not been found, taught or suggested by the prior art of record, which makes these claims allowable over the prior art.

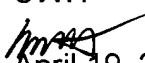
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shih-wen Hsieh whose telephone number is 571-272-2256. The examiner can normally be reached on 7:30AM -5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, S D. Meier can be reached on 571-272-2149. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic

**SHIH-WEN HSIEH**  
**Business Center (EBC) at 866-217-9197 (toll-free). PRIMARY EXAMINER**

  
Shih-wen Hsieh  
Primary Examiner  
Art Unit 2861

SWH  
  
April 19, 2006